

1 **EXPOSED AGGREGATE FINISH**
2 **March 13, 1995**

3 **Description**

4 This item of work shall include all labor, material, equipment, and services required to
5 provide the exposed aggregate finish to surfaces as shown in the Plans.

6
7 The Contractor shall provide sample panels, cast in a vertical position on the site,
8 demonstrating the methods (such as slip-forming), job control, products, etc., that will
9 be used in the formation of the exposed aggregate concrete work. The Contractor
10 shall provide the Engineer with a typewritten detailed report or check list itemizing the
11 procedure used for each sample. The samples must be approved by the Engineer
12 before work begins on the exposed aggregate portions of the structure.

13
14 **Construction Requirements**

15 All exposed aggregate concrete shall be produced in conformance with procedures
16 and processes used in the formation of the approved sample panel. The exposed
17 aggregate shall achieve the same final effect as demonstrated on the approved
18 sample panel.

19
20 Formwork shall be cleaned and reconditioned before each use. Any damage to
21 formwork during placing, removal or storage shall be completely repaired. Formwork
22 with repairs, patches or defects which, in the opinion of the Engineer, would result in
23 adverse effects to the concrete finish shall not be used. Forms and form joints shall
24 remain completely watertight. Butt joints and joints between form units used on
25 surfaces which are to receive an exposed aggregate finish shall be tongue and
26 grooved, or splined and shall be sealed with an approved caulking compound. As an
27 alternate to using tongue and grooved or splined joints, an approved closed cell
28 polyvinylchloride foam sealer of 5 millimeter thickness with pressure-sensitive
29 adhesive on one or both sides may be used to seal the butt joints between form
30 units. The foam shall be recessed by an amount such that when the form units are
31 compressed to their final position, the foam will be flush with the face of the form
32 units. Adjacent formwork panels, if used, shall be in line and no offset shall occur
33 between panels.

34
35 Concrete shall be placed, vibrated and cured in accordance with section 6-02, and
36 these Special Provisions.

37
38 Forms for the exposed aggregate surface for members not yet supporting loads,
39 including the members own load, may be removed as required to effect the exposed
40 aggregate surface, provided the concrete has a minimum age of twelve hours and is
41 of sufficient strength and hardness so as not to be damaged by the form removal
42 operations and provided that curing and protection operations are maintained.
43 Removal of forms on the remaining concrete surfaces shall be as specified in section
44 6-02.

45
46 After the forms are stripped, the surface mortar shall be removed from the exposed
47 aggregate areas.

48
49 The exposed aggregate finish shall be obtained by either one or a combination of the
50 two following methods as necessary to provide the specified exposed aggregate
51 finish:

52
53 ***Method 1 - Retardant Coating***

54 A retardant coating, Ruggsol-S, manufactured by Sika Corp., Etch-pro,
55 manufactured by Tremcrete Systems Inc., True Etch Surface Retarder,
56 manufactured by Burke Co., Tuf-Cote Gray, manufactured by Preco Industries,
57 Ltd., or an approved equal, shall be applied to the formwork where exposed

1 aggregate concrete is shown in the Plans. The retardant shall have an effective
2 life of not less than the length of time required for the exposed aggregate
3 concrete to be in place prior to the removal of forms plus 12 hours. The
4 sealer(s) and form release agent used on the form shall not react chemically or
5 otherwise with the retardant to produce an undesirable effect on the exposed
6 aggregate finish. The sealer(s) and form release agent to be used on the form
7 shall be as recommended by the manufacturer of the retardant and approved by
8 the Engineer. Retardant shall be applied in accordance with the manufacturer's
9 instructions to remove the surface mortar.

10
11 For slip-formed traffic barrier, a retardant coating Rugasol-S, manufactured by
12 Sika Corp., Etch-pro, manufactured by Tremcrete Systems Inc., True Etch
13 Surface Retarder, manufactured by Burke Co., Tuf-Cote Gray, manufactured by
14 Preco Industries, Ltd., or an approved equal, shall be applied to the exposed
15 aggregate areas shown in the Plans. The retardant shall have an effective life of
16 not less than 24 hours. Retardant shall be applied in accordance with the
17 manufactures instructions to remove the surface mortar. The surface mortar
18 shall be removed two to three hours after the application of the retarder.

19
20 Surface mortar shall be removed as follows:

- 21
22 (a) Light abrasive blasting and/or
23
24 (b) Washing with water under pressure, avoiding excessive pressure which
25 loosens individual aggregate particles.

26
27 ***Method 2 - Abrasive Blasting***

28 As soon as forms are stripped, the exposed aggregate areas shall be given a
29 heavy abrasive-blasted finish to remove the surface mortar. For slip-formed
30 traffic barrier this shall be done once the concrete has attained a minimum age
31 of 12 hours and is of sufficient strength and hardness to prevent damage.

32
33 Adjacent materials and finishes shall be protected from dust, dirt and other
34 damage during concrete finishing operations. Areas not designed to receive an
35 exposed aggregate finish shall receive none. Corners and edge of patterns
36 shall be carefully blasted using back-up boards in order to maintain a uniform
37 corner or edge line.

38
39 The abrasive blast finishing shall be done in as continuous an operation as
40 possible, utilizing the same work crew to maintain continuity of finish on each
41 surface or area of work.

42
43 An abrasive grit of the proper type and gradation shall be used as required to
44 expose the aggregate.

45
46 The type of nozzle, nozzle pressure, and blasting techniques used shall be as
47 required to provide the required finish.

48
49 The Contractor shall be responsible for safety of the workers and shall equip
50 each with air-fed helmets. The Contractor shall provide suitable enclosures for
51 the collection of grit and dust from the abrasive blasting operation and shall be
52 fully responsible for any damage or claims resulting from this operation.

53
54 Following approval of the exposed aggregate finish obtained, a 10 percent muriatic
55 acid wash shall be applied to the exposed aggregate surfaces. Surfaces shall be
56 flushed thoroughly with water following a 5 to 10 minute inter-action period between
57 the acid solution and the surface.

1
2 Curing of the concrete shall be in accordance with Section 6-02.3(11). Any staining
3 or streaking of the exposed aggregate surface resulting from the moist curing shall
4 be removed before applying the sealer.